Capability Gap Brief

Artillery / Rockets

LtCol A. A. Lagore
Fires and Maneuver Integration Division
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FMID Capability Gaps

FMID Section Capability Gaps	Priority
Unmanned Aircraft Systems	1
Assault Support	2
Target Acquisition	3
Counter fire / Targeting	4
Fire Support Coordination	5
Information Operations	6
Personal Equipment	7
Small Arms / Crew-Served	8
Mobility / Counter-Mobility	9
Rockets / Artillery	10

Capability Analyzed
Rockets and Artillery

3 JCA's supported: Hi Pri Provide and Employ Joint Fires
6 MCT's supported : Hi Pri Conduct Fire Support Tasks

Deficiencies in Conditions: Precision munitions for all three legs of the ground fires triad.
Deficiencies in Standards: TMRs must be realized or Attack Targets task risks a capacity gap. LW155 quantities expected to rise (OIF, Endstrength +, MCPP-N, DFMA)
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Inputs utilized for analysis:
LW155 JORD – Oct 03
EFSS CDD – Nov 04
HIMARS O&O – Jan 05
Marine Corps Midrange Threat Estimate: 2005-2015
Excalibur UUNS – Dec 05
Grey Book – Mar 06
DC, PP&O GCE Advocate's Capability List. – Jun 06
Initial endstrength increase planning figures.

Gap, Excess, or Shortfall

D	**HIMARS and EFSS Doctrine will need to be developed when systems reach IOC since they provide brand new cap to MC.**
O, T & P	**With 3 new systems entering the artillery community near simultaneously, challenges lie ahead in O, T & P.**
M	**Precision ammunition (PERM, Excalibur, GMLRS) if funding not initiated and/or continued. Imminent AAO increase due to OIF, MC Endstrength increases, DMFA. MMS funding expires in FY10.**
L	**0811 SNCO Career progression training.**

Current PORS

M777 – Towed 155mm howitzer that will provide direct and general artillery support to the MAGTF.

HIMARS – High Mobility Artillery Rocket System which provides GS/GSR, precision, long range fires to the MAGTF.

EFSS – The Expeditionary Fire Support System of the Ship-to-Objective Maneuver Force; 120mm rifled, towed mortar.

Excalibur – GPS guided precision 155mm munition.

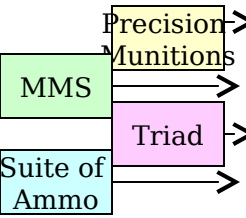
Meteorological Measuring System.

Impact on the MAGTF

1. **Gap in precision ID fires that are required regardless of operating environment.**
   - **Effects the following MCTs:**
     - **3.2.1.1 Support forces in Contact**
     - **3.2.1.3 Integrate Fire Support with the Scheme of Mnvr**
     - **3.2.2.4 Conduct Fires to Destroy an Enemy Force**
     - **3.2.4 Conduct Ground Delivered Fires**
     - **3.2.4.2 Conduct ID fires**
     - **3.2.5.1 Control Ground Surface Fires**
   - **Effects GCE ACL "... provide discriminating / precision ID fires..."**
   - **UUNS 05354UA (MROC DM 23-06)**
2. **Imminent meteorological measuring system, the Meteorological Support Group (MSG), gap.**
   - **Effects the following MCTs:**
     - **As listed on above**
     - **3.2.4.5 Conduct Survey and Met Analysis Operations**
   - **Effects GCE ACL "... ability to calculate non-standard meteorological conditions..."**
   - **Funding for current MMS expires in FY09**

Impact on the MAGTF

3. Capacity gap and sustainability gap of Triad of ID Fire systems.
   - Effects the following MCTs:
     - As listed on previous slide
     - 4.2 Conduct Maintenance
   - Effects GCE ACL "... ID fires capable of providing a triad..."
4. Ballistically similar, increased range suite of ammunition gap.
   - Required by 1997 MNS for Family of Artillery Munitions.
   - Effects the following MCTs:
     - As listed on previous slide
     - 3.2.1.4 Sustain Fire Support
     - 3.2.6 Conduct Non lethal fires
   - Effects GCE ACL "Modern artillery forces capable of providing fires..."



Gaps Summarized

1. Precision
2. MMS
3. Quantity and Sustainability of Triad
4. Suite of Ammo

Key Attributes Needed to Resolve the Gap

Precision Munitions

- **Provide capability to attack targets with precision munitions for all ID firing systems within ground fires triad.**
  - **Precision is quantified as a 10m CEP at terminal effects.**

MMS

- **Provide capability to accurately determine non-standard weather effects up to the upper level of the atmosphere.**

Triad

- **Provide a number of firing systems in DMFA equal to 10% of MC AAO.**

Triad

- **Anticipate technical software and hardware refreshes required for firing systems utilizing advanced technologies.**

Suite of Ammo

- **Reduce number and type of ballistically dissimilar artillery munitions while attaining ranges of current extended range munitions.**

New or Current Capability Issues

Precision Munitions

- **Precision munitions in general is not a new capability.**
  - **Precision munitions is not a new capability for 155mm artillery, but current capability (Copperhead) is obsolete.**
  - **Precision mortar munitions is a new capability coupled with the new 120mm mortar MC Capability (EFSS).**
  - **Fuse kits that provide precision guidance to current unguided munitions is a new capability.**
  - **Precision rocket munitions is not a new capability but must be sustained.**
- **Precision munitions is inextricably tied to capability gap in precision target location.**
- **The capability is not unique to the MC and most ammunition efforts are in conjunction with the US Army, except for EFSS ammo which is unique to the 120mm rifled towed mortar.**

New or Current Capability Issues

MMS

- **Measuring of non standard meteorological conditions is not a new capability. Current capability unfunded after FY10.**
  - **The current system, the MSG, has been in use for over 15 years and was scheduled to be replaced in FY05 by the Profiler, which was never funded**
  - **Technology is available that can provide balloon less modeled meteorological information**
    - **Significant long term cost savings**
    - **Available on demand, no time latency**
    - **Supports future concepts and Distributed Operations**
    - **The Air Wing METOC sections can support a modeling capability with their next generation capability**
    - **Requires FY10 funding**

- **US Army is currently using the Profiler and is planning on fielding Profiler Block III in FY08 which is a balloon less capability**
  - **Current configuration of the Profiler does not support Marine Artillery's Concept of Operations**

Triad

- **Increase of DMFA numbers for firing systems is not a new capability. Triad of fires is a current (or soon to be) capability.**
- **Utilization of advanced technology to realize digital fire control is a new capability but has potential to become stale.**

Suite of Ammo

- **Ammunition is not a new capability but recapitalization of current capability is required.**

Integration Concerns

Triad

- **Maintenance and sustainment of triad of firing systems will need to be continually coordinated with LID.**
  - **Increase in electronic maintenance due to digital fire control**
  - **Increase in breadth of knowledge for artillery mechanics**
  - **Incorporation of PBL**

MMS

- **Modeled meteorological information is planned to be an injector on C2PC and will require coordination with C2 ID .**

Triad

- **Training for artillery MOSs bears close watching due to three new weapons systems reaching FOC near simultaneously. TECOM tracking**

Suite of Ammo

- **Future ammunition procurements will need to be tracked by LID.**

Possible DOTLPFM Impacts

- **Doctrine.**
  - **Doctrine alone will not mitigate capability gaps in artillery/rockets.**
  - **Although, new capabilities will require doctrinal additions.**
    - **LW155 DFCS TTPs – Plan is to initially utilize Paladin TTPs.**
    - **HIMARS - Draft Marine Corps Interim Publication 3-16.1A, High Mobility Artillery Rocket System Operations, dtd 29 Nov 2006, is currently in staffing.**
    - **EFSS – Plan is to publish non-doctrinal statement as starting point and develop TTPs through trial and error. Concept of employment in previous requirement's documents too broad for worthwhile doctrine.**

Triad

- **Organization**
  - **Organizational changes will not mitigate capability gaps in artillery/rockets.**
  - **Transitioning from towed cannon batteries to HIMARS batteries should reduce structure (already reinvested). Continuing adjustments as systems are fielded.**
  - **Target Acquisition Platoon concept will assist in matching targets at varying ranges to appropriate firing system.**

Triad

DOTLPFM Impacts

- **Training**
  - **Changes to training alone will not mitigate capability gap in artillery/rockets.**
  - **Triad of ground fires fielding near simultaneously requires extensive coordination between acquisition community, operating forces and TECOM.**
    - **NETTs appear to be on track for all three systems. Maintenance NETT for ITV (EFSS PM) is in question.**
    - **Fort Sill POIs tracking with Triad fielding.**
    - **Potential knowledge overload for Artillery MOS**
      - **(+current OpTempo, + CMOC mission)**
    - **Mix of systems for 2-3 years (CONUS, UDP, MPF).**
    - **New ammunition requires training throughout sensor to shooter link.**
    - **Non-TECOM sponsored Artillery Training Schools will require staffing stability.**
  - **Potential meteorological solution is supported by a course redesign currently underway at Ft Sill that will be completed 1st quarter FY08**

Triad

MMS

DOTLPFM Impacts

- **Leadership and Education**
  - **MAGTF commanders will have more options available with new firing systems and precision ammunition.**
    - **Limited by nonexistent institutional experience available to advise on Triad employment.**
    - **Must ensure utility of suppressive, massed fires is not lost on leadership.**
  - **Artillery community leadership must embrace technological advances in the production and dissemination of meteorological information.**

Precision Munitions

MMS

- **Personnel**
  - **Personnel changes will not mitigate capability gap.**
  - **MOS changes/additions already accounted for wrt HIMARS fielding.**

Triad

- **Facilities**
  - **Additive firing system (EFSS) capability will require additional facilities (M777-M198, 1 for 1)**

Triad

DOTLPFM Impacts

- **Materiel**

Precision Munitions

- **Precision Munitions - There are material solutions being procured and in varying stages of development to mitigate this gap.**
  - **Guided MLRS munitions are currently being procured by the MC for the HIMARS system. Based on current funding profile, will have 55% of TMR in inventory by FOC (FY10). Will have 86% of TMR in inventory by end of FYDP.**
  - **The 155mm Excalibur GPS guided munition is in final stages of development and testing by the US Army. Funding has not been programmed in previous FYDPs. Funding is requested in the 08 Supplemental build, but only for 120 rds.**
  - **The Precision, Extended Range Munition (PERM) is in research and development for the EFSS. Initial funding was provided through Congressional plus-ups to the 07 budget. Additional funding has been submitted to the 08 supplemental build.**

MMS

- **The Meteorological Support Group (MSG) contains the vehicles, communications assets, and meteorological equipment necessary to support both electronic and visual meteorological operations simultaneously**
  - **No funding past FY09**
  - **Required to provide support to target acquisition assets as well as firing units**
  - **Can be replaced with modeled information that will support re-organization of assets in the TAP concept**
  - **Funding must be established for a replacement system**
  - **Replacing system with modeled information capability represents significant savings in the long term**

DOTLPFM Impacts

- **Materiel**

Triad

  - **Capacity and sustainment gap**
    - **The material solution to mitigate this gap is realized in the programmed Triad of Ground Fires systems.**
      - **A gap though, would occur if programmed funding is not maintained.**
      - **There is a shortfall in the number of M777 systems planned for procurement, specifically in DMFA and the MCPP-Norway. Currently only 4% of the AAO is designated for DMFA and 0 for MCPP-N.**
      - **There is a shortfall in the number of HIMARS systems planned for procurement, specifically in DMFA. Currently, 0% of the AAO is designated for DMFA (4 Launchers at Ft Sill). Additionally, plans to deploy HIMARS to OIF may require an increase in AAO due to MARCENT EDL.**
    - **Properly resourcing the sustainment, hardware and software refreshes is necessary to maximize the capabilities of the system and extend its service life.**

Suite of Ammo

  - **Suite of ammunition gap**
    - **There are current NDI material solutions available to mitigate this gap. Ammunition funding is programmed but not towards the NDI suite of ammunition.**

Possible Solutions
Non-Materiel/Materiel

Precision Munitions

- **Precision Munitions**
  - **Program PANMC funding to meet TMR as identified in 2005 Excalibur O&O.**
  - **Sustain GMLRS funding to meet TMR.**
  - **Program PERM RDT&E funding for EFSS. Fund PANMC in outyears.**

Possible Solutions
Non-Materiel/Materiel

MMS

- **Modeled Meteorological Information Manager (MIM)**
  - **Capability is currently being used in Iraq**
  - **Effective use requires an interface between the modeling interface with digital fires devices (AFATDS)**
  - **A system has been demonstrated and is currently available that supports a two way exchange of information required for effective use**
  - **This solution represents significant cost savings. It is estimated that the cost of fielding this capability across the Marine Corps will be less than the cost required to field the MSG to one regiment**
  - **This capability can be augmented by the METOC NEXGEN system**

Possible Solutions
Non-Materiel/Materiel

Triad

- **Capacity Shortfall**
  - **Increase M777 LW155 AAO by 28 (+21 for 202K)**
    - **22 for DMFA to bring total to 36 (~10% of 363 Operational AAO)**
    - **6 for MCPP-N**
    - **Further analysis required to balance MARCENT EDL and MPS quantities.**
  - **Increase HIMARS AAO by 4**
    - **4 for DMFA (10% of Operational AAO)**
  - **Program PMC funding in out years for technical software and hardware refresh of DFCS.**

Possible Solutions
Non-Materiel/Materiel

Suite of Ammo

- **Suite of Ammunition**
  - **Re-program PANMC funding from M107, M795 and M592 lines.**
  - **Anticipating approval of 155mm Suite of Cannon Artillery Munitions, Increment 1 CPD.**
  - **Track development of future increments of ballistically similar artillery munitions. Initiate CPD development when increments are at NDI level.**
    - **Smoke, Visible Illum, IR Illum**

Funding Continuation

- **The AFATDS and Fire Support Sustainment lines of the baseline must remain intact and continued.**
  - **These lines cover planned and unforeseen changes in the programs they support.**
  - **Failure to continue funding or excessively decrementing will equate to gaps and shortfalls in the future in artillery/rocket capabilities.**